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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/115,589	07/15/1998	JENNIFER E. VAN EYK	12917	1553

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EXAMINER	
BORGEEST, CHRISTINA M	

ART UNIT	PAPER NUMBER
1649	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/115,589	VAN EYK ET AL.	
	Examiner	Art Unit	
	Christina Borgeest	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *80-84 and 87-102* is/are pending in the application.

4a) Of the above claim(s) *99-102* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *80-84 and 87-98* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *19 January 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Formal Matters

Claims 56-59, 62-69, 71-79 have been cancelled. Claims 80, 97, 99, 100, 101 and 102 are amended.

Applicants' election filed 3/10/00 limits the instant claims to the methods employing troponin I and residues 1-193 of troponin I (SEQ ID NO: 21) and excludes as non-elected troponin T, troponin C, α-actinin, and SEQ ID NOs: 22, 23, 24, 25, 26, 27, 30, 31, 32, 33. Therefore, the instant claims are only being examined to the extent that they read on methods employing troponin I and residues 1-193 of troponin I (SEQ ID NO: 21). Applicants' election filed 3/10/00 limits the instant claims to methods employing a myosin light chain 1 peptide fragment comprising residues 20-199, which almost corresponds to SEQ ID NO: 28 (see new matter rejection below), and excludes other myosin light chain 1 peptide fragments such as SEQ ID NO: 29.

In their correspondence filed 29 March 2006, Applicants' request that claims 99-102 be searched, and that more than one species of an invention may be claimed in different claims in one application provided that the application includes an allowable claim generic to all the claimed species and all claims to species in excess of one are written in dependent form. Applicants' arguments have been fully considered but they are not persuasive. There is no one allowable claim generic to all the claimed species in the instant claims. Applicants' election filed 3/10/00 limits the instant claims to the methods employing troponin I and residues 1-193 of troponin I (SEQ ID NO: 21) and

excludes as non-elected troponin T and troponin C, and claims 99-102 contains subject matter not included in original election.

Claims 80-84, 87-98 are currently under consideration.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Rejections Withdrawn

Claim Rejections - 35 USC § 102

The rejection of claims 56-59, 62-65, 68-69, 71-84, 87-90 and 92-98 under 102(b) as set forth at pps. 5-6 of the prior Office action (mailed 29 December 2005) as being anticipated by Löfberg et al. has been withdrawn in response to Applicants' cancellation of claims 56-59, 62-65 and 71-79 and amendment of claims 81-84, 87-90 and 92-98 to include "skeletal" in the description of the peptide fragments formed in the complex.

The rejection of claims 56-59, 62-65, 68-69, 71-84, 87-90 and 92-98 under 102(b) as set forth at pps. 6-7 of the prior Office action as being anticipated by Wicks et al. has been withdrawn in response to Applicants' cancellation of claims 56-59, 62-65, 68-69, 71-79 and amendment of claims 81-84, 87-90 and 92-98 to include "skeletal" in the description of the peptide fragments formed in the complex.

The rejection of claims 56, 62-66, 68-69 and 71-79 under 102(b) as set forth at p. 7 of the prior Office action as being anticipated by Takahashi et al. has been withdrawn in response to Applicants' cancellation of those claims.

The rejection of claims 56-59, 62-65, and 71-84, 87-90 and 92-98 under 102(b) as set forth at pps. 7-9 of the prior Office action as being anticipated by Westfall et al. has been withdrawn in response to Applicants' cancellation of claims 56-59, 62-65 and 71-79 and and amendment of claims 81-84, 87-90 and 92-98 to include "skeletal" in the description of the peptide fragments formed in the complex.

Objection Maintained/New Rejections

Objection to the Specification – 35 USC 132

The objection to the specification under 35 U.S.C. 132(a) because it introduces new matter into the disclosure made in the previous office actions (mailed 13 January 2005 and 29 December 2005) is maintained in part. The objection to the specification under 35 U.S.C. 132(a), which states that no amendment shall introduce new matter into the disclosure of the invention, is for the amendment filed 6 August 2004 because it introduced new matter at page 12, line 14, p. 24, line 12, p. 25, line 4: a myofilament protein modification product can be a peptide fragment of myosin light chain 1, such as all or a portion of all the carboxyl-terminal region consisting of amino acids 20 to 199 has been changed to amino acids 20 to 192 and (SEQ ID NO: 28). No explanation is given why the alteration was made. (Note that in the prior Office action mailed 29

December 2005 "192" and "199" was erroneously transposed). The corrections of p. 10, line 21 and p. 14, line 3 is noted.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 80, 81, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96 are rejected under 35 U.S.C. 102(a) as being anticipated by Takahashi et al. (Reference #7 on Applicants' 1449 form submitted 21 January 2004). The claims are drawn to a method for assessing skeletal muscle damage in a subject, comprising detecting the presence or absence or measuring the amount of a peptide fragment of a myofilament protein in a biological sample obtained from a subject being assessed for skeletal muscle damage by incubating the biological sample with an antibody or a functional fragment of an antibody that specifically binds to the peptide fragment of a myofilament protein under conditions which allow the antibody or functional fragment of the antibody to form a complex with the peptide fragment of a myofilament protein and detecting or measuring the formed complex, wherein said peptide fragment of the myofilament protein or said peptide fragment of the covalent or non-covalent complex formation consists of a skeletal troponin I peptide fragment, a skeletal myosin light chain 1 fragment, a skeletal

troponin T fragment, a skeletal troponin C fragment or a skeletal α-actinin peptide fragment, wherein the presence or amount of the peptide fragment to the myofilament protein in the biological sample is associated with skeletal muscle damage, wherein the complex is detected by a label (e.g. horseradish peroxidase) measured by enzymatic activity, and the antibody is immobilized on a solid phase (e.g. a plastic surface), wherein the skeletal muscle damage is reversible or irreversible and/or due to hypoxia, hypoxemia, ischemia, fatigue or reperfusion, wherein the biological sample is selected from skeletal muscle tissue, a component thereof, blood, blood serum or urine. Takahashi et al. teach a two site enzyme immunoassay for skeletal fast twitch skeletal troponin I (see p. 301, right column, 2nd paragraph; p. 302, whole page; p. 304, left column), wherein complex is detected by horseradish peroxidase (p. 303, left column, 2nd paragraph), wherein the skeletal muscle damage is reversible (hypoxia: marathon runners—see p. 304, right column, 3rd paragraph) or irreversible (chronic degenerative muscle disease—p. 305, left column, last paragraph; wherein the biological sample is blood serum (p. 303, right column, 2nd paragraph); thus they meet all the limitations of claims 80, 87, 88, 89, 90, 91, 92, 93, 94, 95 and 96.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 80-84 and 87-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. as applied to claims 80, 81, 87, 88, 89, 90, 91, 92, 93, 94, 95 and 96 above, and further in view of Westfall et al. (cited in Office actions mailed 7 April 2004, 13 January 2005 and 29 December 2005). As stated above, Takahashi et al. teach a two site enzyme immunoassay for skeletal fast twitch skeletal troponin I (see p. 301, right column, 2nd paragraph; p. 302, whole page; p. 304, left column), wherein complex is detected by horseradish peroxidase (p. 303, left column, 2nd paragraph), wherein the skeletal muscle damage is reversible (hypoxia: marathon runners—see p. 304, right column, 3rd paragraph) or irreversible (chronic degenerative muscle disease—p. 305, left column, last paragraph; wherein the biological sample is blood serum (p. 303, right column, 2nd paragraph). Takahashi et al. do not teach that the presence of at least two different peptide fragments are detected and the ratio of at least two different peptide fragments of myofilament proteins are compared as an indication of the extent of skeletal muscle damage. Westfall discloses the use of

various antibodies and detectable markers (alkaline phosphatase, page 303) to detect fragments from both troponin I and troponin T (abstract) for the purpose of assaying cardiac muscle damage from ischemia from biological samples such as a component of cardiac muscle tissue (page 303). The amount of damage is correlated with time of ischemia (30 minutes as compared to 60 minutes) and ratios were established between the gradual reduction of whole troponins and the appearance of troponin fragments (pages 307-308, Figures 10 and 11, and Table 1). It would have been obvious to the person of ordinary skill in the art at the time the invention was made to modify the teachings of Takahashi et al. by measuring more than one peptide fragment and comparing the extent of damage, as taught in Westfall et al. because according to Westfall et al., "[m]yocardial ischemia may cause changes in individual myofibrillar proteins that affect myofibrillar function" (see p. 311, left column, 2nd paragraph), thus suggesting that more than one protein should be measured to assess the full spectrum of damage. The person of ordinary skill in the art would have been motivated to make these changes for the same reason. Furthermore, the person of ordinary skill in the art could have reasonably expected success because Takahishi et al. and Westfall et al. report success, and the methods employed by both are known in the art. Thus the claims do not contribute anything non-obvious over the prior art.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 80-84 and 92-98 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 16-18, 20-28, 31, 34-35 and 37-41 of copending Application No. 09/419,901. Although the conflicting claims are not identical, they are not patentably distinct from each other for several reasons. First, both are drawn to assessing skeletal muscle damage (the '901 application recites skeletal in the alternative. Second, the copending '901 claims recite "protein modification products", which read on cleaving signal sequences or other post-translational modifications, thus the methods read on detecting proteins. Finally, although the claims of the '901 application do not specifically recite a method using detection with antibodies; they do recite detection of modified proteins, and it is always obvious to detect proteins using antibodies.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Borgeest whose telephone number is 571-272-4482. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Elizabeth C. Kemmerer

Christina Borgeest, Ph.D.

ELIZABETH KEMMERER
PRIMARY EXAMINER